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AN EXPERIMENT TO INVESTIGATE THE GENERATION OF NEW IDEAS AS A RESULT OF SUBGROUP PARTICIPATION WAS CONDUCTED WITH TWO U.S. HISTORY CLASSES IN GRADES 7-8. THREE WAYS OF ORGANIZING CLASS ACTIVITY WERE USED--INDIVIDUALLY, SUBGROUPS, AND FULL-CLASS SESSION. "CLASS A" WAS QUIETER, MORE DELIBERATE, MORE STABLE, MORE DEPENDENT, AND LESS ABLE THAN "CLASS E" WHICH WAS NOISIER, MORE IMPLUSIVE, MORE VOLATILE, AND MORE COMPETITIVE. EIGHT CLASS PERIODS WERE USED FOR THE STUDY. A POSTMEETING REACTION QUESTIONNAIRE WAS USED TO MEASURE STUDENT SATISFACTION WITH CLASSROOM ACTIVITIES, AND AN IDEA QUESTIONNAIRE WAS USED TO TRACE THE ORIGIN OF STUDENTS' IDEAS. STUDENT AND TEACHER VERBAL BEHAVIOR WAS RECORDED ON TAPE. THE CLASSES WERE STARTED WITH INDIVIDUAL EFFORT BASED ON READING A HISTORICAL NOVEL. SUBGROUP ACTIVITY WAS FOLLOWED BY FULL-CLASS DISCUSSION AND FURTHER INDIVIDUAL RESEARCH. IN "CLASS E" THE PRODUCTION OF IDEAS COVARIED WITH FREEDOM OF PARTICIPATION, BUT "CLASS A" PRODUCED MORE IDEAS UNDER TEACHER CONTROL. CONCLUSIONS RELATE TO THE MODE OF CLASS ORGANIZATION AND TO THE CHARACTERISTICS OF THE INDIVIDUALS IN THE GROUP. REPORTS OF TWO OTHER EXPERIMENTS ARE INCLUDED IN THIS PAPER. THE FIRST OF THESE (ALSO CONDUCTED WITH TWO PREFRESHMAN CLASSES STUDYING U.S. HISTORY) OFFERED THE PRELIMINARY CONCLUSION THAT PARTICIPATION IN SUBGROUPS TEND TO INCREASE THE STUDENT'S CONFIDENCE AND SATISFACTION AND TO MOVE HIM TOWARD READINESS. ANOTHER EXPERIMENT EXAMINED THE RELATIONSHIP BETWEEN THE CHARACTERISTICS OF THE STUDENT CONTRIBUTOR IN A HISTORY CLASS AND THE VALUE OF THE CONTRIBUTION AS PERCEIVED BY CLASSMATES. THIS PAPER WAS WRITTEN AS PART OF THE SOCIAL SCIENCE EDUCATION CONSORTIUM, A CURRICULUM PROJECT DESIGNED TO OUTLINE THE CONCEPTS, METHODS, AND STRUCTURE OF SEVERAL OF THE SOCIAL SCIENCES FOR USE BY TEACHERS AND CURRICULUM WORKERS AT ALL GRADE LEVELS. (AL)

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The research was conducted under the supervision of Professor Herbert Thelen, Department of Education, University of Chicago.

FOREWORD

Considering the importance of the educative process, the paucity of research on what actually happens in the classroom is somewhat startling. Typically, research efforts have been directed at the measurement of simple "gain", in terms of achievement or of expressions of satisfaction of students and teachers.

It must be admitted that the problems of classroom reaearch are formidable: the problem of "controlling" the population entering the experiment, the arduous task of training teachers to implement the "new" method, the tremendous amount of time required for differences between methods to show up, the difficulty of measuring outcomes which are significant and, as a crowning blow, the fact that after the results are in, no one can say for sure what caused them. It is obvious that a breakthrough is needed in our concepts of designs for classroom research, and the researches reported herein represent such an effort.

The hunch we have played in designing the three experiments reported here is that any valid learning or teaching principle that works on the macro level should also work on the micro level, if one can make a sharp enough experimental design. Each experiment took only one or several days of class time; the variables measured are sensitive ones; and the feedback information is carefully pinpointed to get at the relatively simple objectives of the experiment. The teacher, Mr. John Patrick, worked closely with the researchers, planned the lessons with care, and followed through in the classroom in exemplary fashion. Intelligent interest and understanding on the part of the teacher is, of course, an absolute essential for such research; he is still the most influential factor in the classroom!

While the results are not entirely conclusive, they are as conclusive as most experiments that work with the same variables over a period of a year. However, I would like to believe that the experiments do more than show how to get the usual inconclusive effects more efficiently. I hope that they also point in a promising direction, and that they will encourage others to take a fresh look at what might be done in classroom research.

Herbert A. Thelen

University of Chicago
March, 1966

PART I

SUBGROUP EXPERIENCE IN TWO UNITED STATES HISTORY CLASSES: ORGANIZATION OF STUDENT EFFORT AND THE PRODUCTION OF IDEAS

Keith Elkins

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BACKGROUND AND PURPOSE

In a prior study done under the auspices of the Social Science Education Consortium,[1] the researchers were interested in investigating the effects of learning by inquiry in the social studies classroom.[2] They began by listing some of the assumptions underlying the model of inquiry for teaching developed by Thelen:[3] "...that participation in subgroups gives students an opportunity to try out (hence clarify) their ideas'...helps prepare students to listen to the ideas of others'...and increases confidence.... That through such interaction, and with increased confidence, the student acquires: a) willingness and ability to formulate and organize ideas; b) a sense of commitment to the subject under inquiry....And he develops a 'readiness' to make "a" and "b" above manifest in class discussion, written reports, oral reports, or other (classroom tasks)."

The researchers hypothesized that "...participation in small groups tends to increase a student's (confidence), regardless of ability." They found confirmation for this hypothesis. In addition they found evidence that subgroup interaction increased student interest in working with friends. There was also a greater generation of both new ideas and a desire to get more information on the assigned topic.

Of these discoveries the generation of new ideas as a result of subgroup participation was a provocative one. Subgroup activity is characterized by freedom from teacher punishment through criticism, implicit or explicit, of student contributions. Perhaps students in subgroup activities will, as a result of that freedom, generate their own ideas for investigation and exhibit a greater commitment to that activity. If this assumption is correct, and the materials for confrontation are carefully selected, participation in the subgroup would result in an increase in confidence and hence a greater "readiness" to work.

Building on the fundamental assumption that activity in the subgroup is a transition between private, individual investigation of a problematic state and public, class-wide investigation of a general problem, the researchers designed an experiment to study systematically the effects of three ways of organizing student effort in the classroom. On the premise that working individually, in subgroups, and in full-class session neatly comprised the transition mentioned above, the researchers studied the relationships between these three ways of organizing student effort and the generation of student ideas for later investigation, a requirement they made common to all three conditions. They also studied the relationships between the three ways of organizing student effort and the satisfaction the students expressed in having been so organized. This, they felt, would allow them to draw conclusions about a necessary connection between a subgroup's provision of gratification and its stimulation of ideas.

Over a period of twelve calendar days (eight school days spanning a four-day Thanksgiving holiday) the researchers gathered data in two prefreshman U. S. history classes taught by Mr. John Patrick in the University of Chicago Laboratory School.[4]

The two classes, according to the teacher and the researchers who observed them in action, were different. Class A, which meets at 8:55 a.m., (immediately following on one day a week their homeroom period in the same room with the same teacher) was composed of nine girls and twelve boys. It had fewer students the teacher called "talented." Among the students in this class were four who read at the (Lab school) fourth-grade level, and only two who read at the level at which most in the other class read. Five students in this class were new to the Lab school this year, and two were repeating their prefreshman year. The rest fall into a loosely defined category one might call "Lab School average." Members of Class A asked few questions when assignments were made to the whole class; they asked them individually as unanticipated difficulties arose during the course of the class period, or in concert as unexpected implications became clear at the end of a class period. Class A, with fewer students speaking impulsively or compulsively, was more decorous than the other class. They "cover the ground" faster: twice during the time of the experiment they pulled ahead of the other class by as much as a full period. According to comments by the teacher, and observations by the experimenters, members of Class A "listen to each other" and "build" on each other's comments. They argued with each other and the teacher less than did those in the other class. In short, Class A, better known to the teacher and easier to work with, was quieter, more deliberate, more stable, more dependent, and less able than the other class.

The other class, called Class E, met the fifth period of the day, from 12:10 to 12:50, and was composed of nine girls and fourteen boys. It had a majority of students the teacher called "talented." There were fewer students who fell into the loosely defined "Lab School average" category and none who read at the (Lab School) fourth-grade level. Class E asked many questions at the time assignments were made to the whole class but fewer than Class A once the students began the assignment. Class E was restive: although there were four in this class who never spoke at all, the rest never seemed to say all they wanted to. Members of Class E, when called on, spoke as if no one had spoken before them; that is, each made his point without reference to previous comments. Class E, then, was noisier, more impulsive, more volatile, more competitive, and more able than Class A.

PROCEDURE AND DESIGN

With a tape recorder and two questionnaires,* the researchers observed both classes on three consecutive school days before the Thanksgiving holiday and five days after. The post-meeting reaction questionnaire (PMR) was designed to measure students' satisfaction with classroom activities.[5] The idea questionnaire was designed to trace the origin in space and time of the students' ideas for further investigation.[6] The tape recordings were intended to provide, if necessary, information concerning: a) pertinent teacher or student verbal behavior; b) teacher comments, either supportive or punitive, regarding student behavior or class performance; and c) student questions regarding the nature of the assignment.

During the first few minutes of the first day, as a part of his introduction to the unit on political aspects of U. S. territorial expansion after the colonial period, the teacher explained in some detail the idea questionnaire: what it was for and how it was to be used. Then he asked if there were any questions and answered those that were asked. The plan, he said, was that the students would first spend a few class periods working individually, reading *No Other White Men*[7] and recording ideas that occurred to them on the idea questionnaire, which they were to keep with them continuously until asked to hand it in. Later on during the time devoted to the unit, he explained, they would select one of their recorded ideas, do documentary research in relation to it, and write the results in an essay. In addition to the rest of the first day, Class A spent all of the next, and Class B most of the next two days reading the novel. At the end of the first and second days, the PMR was administered to both classes, but to neither class at the end of the third.[8] Both classes were reminded several times during this period to keep a running account of their ideas as they occurred, even during the holiday.

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* Reproductions of the questionnaires are appended.

On the following Monday, by which time students were to have finished No Other White Men, both classes found their classroom arranged for subgroup activity: tables had been placed to accommodate groups of up to five persons. Without instruction, class members arranged themselves in groups of three to five members.[9] The teacher then distributed copies of the instructions for the work to be done in the subgroups: they were to select a chairman and recorder and then list all the questions they could think of that met the standards included in the instructions that had been given them.* At the end of the period they were again reminded of the idea questionnaire, told that they could add ideas suggested to them by their subgroup's list of questions, and then administered the PMR.

The fifth, sixth, and seventh days were devoted in whole or in part to a critical analysis in full-class discussion of the questions generated in the subgroups the previous day. During the first few minutes of the fifth day students were helped to recognize that the standards used in the subgroups' listing of questions could be used in full-class evaluation of all questions, which the teacher had compiled into a master list overnight. Both classes then considered whether the questions on their master list should be accepted, changed and then accepted, or rejected as unsalvageable. At the end of the few minutes devoted to this activity on the fifth day, the teacher assigned the students, as homework the task of continuing the job begun in class, i.e., evaluating the remaining questions and recording suggested changes; but he did not administer the PMR to them.[10] At the end of the sixth day, which was wholly devoted to the critical analysis of the questions, the PMR was administered to both classes. Several times during the sixth and seventh days (the latter devoted to the same activity), the students were told that they could add to their own idea questionnaires, ideas suggested to them by the questions on the approved master list. Toward the end of the seventh day, they were told to select one of the ideas listed on their own idea questionnaire, label it as the one selected, and hand in the questionnaire. Then the PMR was administered.

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* A reproduction of the instruction sheet is appended.

On the eighth day of data-gathering, the teacher spent a few minutes in each class eliciting from the students speculations about what their next step should be. He then launched them into individual research, calling attention to primary and secondary sources in the room as well as mentioning the resources of the library. At the end of the period he administered the PMR once again.

The students in each class, then, worked under three conditions of classroom organization of student effort: individually, in subgroups, and in full-class session. These three conditions - or treatments - constituted the independent variable in this study. General satisfaction, as measured by the PMR, was intended as one of the dependent variables. Production of ideas, as recorded on the idea questionnaire, is the other dependent variable.

The design of the study lends itself to two general questions: What are the differences in general satisfaction, as reported on the PMR, among the several conditions? What are the differences in production of ideas, as recorded on the idea questionnaire, among the several conditions? Because the differences in dependent variable measures were also discovered to be a function of the observed differences between classes, these questions will be rephrased for investigation.

1. What are the differences in general satisfaction between classes when students work individually?
2. What are the differences in general satisfaction between classes when students work in subgroups?
3. What are the differences in general satisfaction between classes when students work in full-class session?
4. What are the differences in production of ideas between classes when students work in subgroups?
5. What are the differences in production of ideas between classes when students work individually?

6. What are the differences in production of ideas between classes when students work in full-class session?

7. What are the differences in general satisfaction and production of ideas among the several conditions?

EXAMINATION AND INTERPRETATION OF DATA

This study was primarily designed to show relationships among the three conditions of organization of student effort and the dependent variables, general satisfaction and production of ideas. Because of the uncontrolled effect on dependent variable measures by the observed differences between classes, however, the data will be examined for answers to the following general questions: What is the nature of the pre-existent difference between classes? What effect does this difference, in combination with treatment, have on the production of ideas? With this in mind, one may examine Table 1 below for answers to questions 1, 2, and 3 in the preceding section.

TABLE 1.

POSITIVE RESPONSES MADE BY STUDENTS IN CLASS A AND CLASS B TO FIVE QUESTIONS ON THE POST-MEETING REACTION QUESTIONNAIRE (PMR)

DAY	ACTIVITY	ORGANIZATION OF STUDENT EFFORT	CLASS	SATISFACTION PMR QUESTIONS*				
				2	3	4	5	6
1	Intro to Unit Reading of Book	Individual	A	75	100	100	95	90
			B	75	100	91	71	63
2	Reading of Book	Individual	A	100	100	100	100	90
			B	68	100	100	86	75
4	Generation of Questions	Subgroups	A	62	86	76	71	81
			B	81	86	90	86	86
6	Evaluation of Questions Generated	Full-class	A	89	95	79	84	79
			B	22	24	61	44	61
7	Evaluation of Questions and Selection of Idea	Full-class	A	53	100	100	83	83
			B	81	100	67	76	67
8	Beginning of Investigation	Individual	A	63	100	88	88	88
			B	57	100	86	62	71

* PMR QUESTIONS:

2. How did you feel the activity was today?
3. How clearly did you understand what the activity was all about?
4. How satisfied were you with your participation in the activity?
5. During how much of the time did you feel that the opportunity existed for you to participate in the activity?
6. When you participated, how often did you say or do what you really wanted to?

Table 1 shows: 1) the days on which the PMR was administered; 2) the nature of the activity engaged in by both classes on each of these days; 3) the way student effort was organized on each day; 4) the class; and 5) the percentage of positive responses, in each class separately, to the questions asked on the PMR.[11]

The first and fundamental observation to be made in view of the data in Table 1 is that the two classes seem to respond differently to questions on the PMR. Rank order correlation coefficients between the classes' percentages of positive responses to each question on the PMR were computed with the following results:

PMR QUESTION	rhe
2	-.47
3	.95
4	.49
5	.04
6	.16

Only one of these coefficients, that representing the classes' understanding of what the daily activities were all about, is significant at the .05 level. None of the other coefficients approaches significance, supporting the observation that the two classes seem to respond differently to the PMR questions.

In response to a global indicator of satisfaction with the activities engaged in day by day (PMR question 2), the two classes showed a tendency to respond positively on altogether different days, possibly to altogether different ways of organizing student effort. In keeping with this tendency, it will be noted in Table 1, Class A moved from a percentage of positive response approximately equal to that of Class E on day 1, (best characterized relative to the following day by confusion as the new unit was introduced) to its highest percentage of positive response to this question on day 2, which was devoted to a continuation of the activity introduced the previous day. Class E, on the other hand, moved hardly at all. It should be noted that while day 2 was the day of Class A's highest percentage of positive response to this question when students worked alone, Class E attained its highest percentages of positive response on day 4, when students worked in subgroups without teacher intervention, and on day 7, students engaged in a full-class discussion involving much pupil-pupil interaction.

In the interests of coherence, consideration of the data representing responses to PMR question 3 will be postponed, and the data concerning PMR question 4 will be discussed. Two helpful observations may be educed from the responses to PMR question 4: How satisfied were you with your participation in the activity? First, in response to day 4, the subgroup day, Class A manifested less satisfaction with their participation - absolutely - than did Class E, a difference particularly noticeable in view of Class E's observable tendency to use all scales more negatively. This observation, along with the implications of those in the paragraph above, suggests that Class E, far more than Class A, preferred free-wheeling pupil-pupil interaction. The second observation to be educed adds more. In response to days 6 and 7, devoted to pupil-pupil interaction leavened by teacher direction, students in Class A manifested far more satisfaction with their participation than did those in Class E. These observations, together with those made in connection with how the students felt the activity was each day, suggest rather clearly an interpretation consonant with the observed differences between classes: Class E, more able and impulsive than Class A, derived greater satisfaction than did Class A from activities characterized by an abundance of student interaction and an absence of teacher direction.

Conclusions suggested by examining responses to PMR question 5, (During how much of the time did you feel the opportunity existed for you to participate in the activity?) were in keeping with this interpretation. In this column the observer's eye falls first on the percentages of positive responses made on day 4, the subgroup day. Class A manifested an abrupt decline in its estimation of opportunities for participation on this day. Class E, on the other hand, showed as many positive responses on this day as on day 2, the other day showing high positive response. More to the point, however, is the observation that in the percentages of positive responses to this question, this day ranked last for Class A and first for Class E (along with day 2). These observations and comparisons made between the remaining figures for the two classes in this column, lend themselves to interpretation as follows: Generally when all is ordered - when the risk is lowest - Class A found the opportunity to participate; only when all is free - when the risk is highest - did Class F find the greatest opportunity to participate.

Support for an interpretation of this kind is found in the column under PMR question 6: When you participated, how often did you do or say what you really wanted to? It is noted first that members of Class A did or said what they really wanted to relatively less often on all days devoted to discussion, whether in subgroups or in full-class session, than they did on days devoted to individual work. That is, on days when there was least opportunity to do or say anything at all to anyone else (days 1 and 2), they reported most often that they did or said what they really wanted to. Members of Class E, on the other hand, reported most often that they did or said what they really wanted to on day 4, the subgroup day.

In response to a global question concerning how they felt the activity was each day, students in the two classes showed a slight tendency to respond positively on altogether different days, sometimes to altogether different ways of organizing student effort. To questions having to do with their opportunities to participate as they really wanted to, students in the two classes tend to respond in absolutely unrelated ways. To another question concerning their satisfaction with their participation, the classes showed a slight tendency to respond positively on the same days, which may be seen as reflecting the class members' satisfaction with themselves as well as an objective assessment of their participation's worth to the class as a whole. All four of these questions tapped a feeling of responsiveness to what went on in the classroom day by day, also elicited are responses that seem quite clearly to differentiate between the classes. Together those provide the substance for interpretations.

An interpretation consistent with all the suggestions made above, and explicative of the differences observed between the classes, can be made in terms relating to a belief in oneself and one's abilities. In this connection Class E responded more positively - absolutely - than did Class A to questions on day 4, when the teacher, except for prearranging tables, provided virtually no direction over what the students did. It will also be noted that Class A registered either its lowest (questions 4 and 5) or second-lowest (questions 2 and 6) daily percentages on day 4, the subgroup day, while Class E registered its highest percentages in response to questions 2, 5, and 6, and a high percentage in response to question 4 on that day.

These observations, along with all the others, suggested the following interpretation of the differences between classes as manifested in the post-meeting reaction questionnaire, i.e., (PMR). In the absence of maintained authoritative structure, there were no clear-cut expectations according to which members of Class A can prejudge the acceptability of their participation; there were only the unpredictable, hence threatening, reactions of other students. Constrained - inhibited - in fear of the consequences of participation in the absence of adult control, they reported less general satisfaction and find fewer opportunities to participate. Members of Class E, on the other hand, suffered neither the fear nor the consequent constraint of Class A members, but instead, felt only the impulse to self-expression. And when their impulses were restrained by the exercise of classroom authority, they reported less general satisfaction and find fewer opportunities to participate.

Two considerations of the data in Table 1 remain: the precipitant "drop" in the percentages of positive responses made by Class E to all questions on day 6; and the disconcerting equality between the percentages of positive responses made by both classes to question 3 day by day.

The drop in Class E's percentages of positive responses to all five questions on day 6 was coincident with disciplinary comments made by the teacher on that day, both to individuals in the class and the class as a whole. This coincidence lead to two observations. The drop in reported satisfaction and understanding on a day of disciplinary comment - scolding, if you will - demonstrated that the PMR successfully recorded changes in classroom climate and consequent student reaction. Second, the drop demonstrated rather dramatically that the effect of disciplinary comments in the classroom was not limited to the elimination of inappropriate behavior. One might ask, for example, what the relationship was between such disciplinary comments and students' capacity to comprehend the nature of subject-matter problems, or solutions, presented to them. What were the effects of such comments when directed at individuals and when directed at the class as a whole? Were students not singled out affected by such comments directed at others in the classroom? How? These questions, though provocative, were tangential to the present study.

In connection with the observation that both classes seem to have understood remarkably and equally well what their daily activities were about (PMR question 3) - a tribute to their teacher that makes the task of interpretation more difficult - one should note the "dip" in such understanding on day 4, the subgroup day. The dip may be explained in terms relating to the nature of the activity on that day. Gathering in subgroups of three to five members around prearranged tables, the students were given copies of instructions to be followed and told to go to work. The teacher parried questions about what was to be done by referring students to the dittoed instructions. The students, then, had to proceed as best they could without further help or reassurance from the teacher. This explanation raised some additional tangential speculation: What were the effects on student understanding when instructions were given personally, by the teacher for example, and when they were given impersonally on a piece of paper perhaps?

To be remembered here, however, is that except for day 6 as described above the two classes under consideration exhibited no perceptible difference in understanding what their daily activities were all about. This significant similarity stands in sharp contrast to the differences between classes in their responses to other PMR questions, which had to do generally with how they felt about the activity and their participation in it, and suggests that question 3 may have been tapping something quite different from that which was tapped by the other questions. That is, while the other four questions involve much the same general thing, satisfaction, question 3 did not involve anything that could be made to look like an index to satisfaction.

While the other questions elicited responses exclusively indexing affective reactions to the daily activity, question 3 elicited responses that had as much to do with cognitive reactions as they had with affective reactions. Though susceptible to change as a function of negative affective reactions, as on day 6, when preoccupation with whatever feelings resulted from the teacher's criticism may have precluded understanding of what the activity was all about, this question more directly tapped the students' understanding of what the teacher expected them to accomplish each day. That is, it measured the extent to which they understood what was required of them from having engaged in the activity. This can explain the remarkable similarity of responses to this question between classes, while on the other hand they responded so differently on measures of general satisfaction?

In the preceding discussion the PMR measures of satisfaction, incorporated in the original design of the study as a dependent variable, have been used as an index to the nature of differences that existed between the two classes prior to treatment. Employed so, the PMR has been used as if it were a measure of an independent variable. This is as it should have been; for it is clear that whatever the dependent variable is, it depends on both the way student effort was organized and the differences already existent between classes. It is now as if one were studying the differences in the production of ideas under the several conditions of organization of student effort and the extent to which the classes can be said to feel confident in their ability to participate when so organized.

Some emendation is required before data on the production of ideas can be considered. Class A produced the second-largest (23%), Class E the largest (32%), percentage of their total production of ideas on day 7. This efflorescence of creativity can be attributed to an announcement by the teacher on that day that students were to select one idea for investigation, label that idea on the idea questionnaire as the one selected, and hand in the questionnaire. Though such a finding provokes interesting and perhaps relevant questions about the relative effectuality of "internal" and "external" motivation of students, it cannot be used. Because of the uncontrolled, hence incalculable, effect of such a requirement in the context of the study as designed, data for day 7 will be left unconsidered. Also left unconsidered is the data for day 8, since the ideas recorded on the day (after students had met the requirement mentioned above) cannot be related to any one of the three conditions under study. For the same reason, data for day 5, devoted to an altogether unrelated activity, will not be considered. Finally, because Class A met for only a part of the period on the third day and then left for an assembly, while Class E met for the whole period on that day, data for day 3 will have to be deleted as well.

These deletions leave data tabulated as follows:

TABLE 2

POSITIVE PMR RESPONSES AND NUMBER AND PERCENTAGE OF IDEAS PRODUCED BY STUDENTS IN CLASS A AND CLASS E

DAY	ACTIVITY	ORGANIZATION OF STUDENT EFFORT	CLASS	SATISFACTION PMR QUESTIONS					PRODUCTION OF IDEAS	
				2	3	4	5	6	No.	%
1	Intro to Unit Reading of Book	Individual	A	75	100	100	95	90	7	42
			E	73	100	91	71	63	6	22
2	Reading of Book	Individual	A	100	100	100	100	90	3	18
			E	68	100	100	86	75	2	7
4	Generation of Questions	Subgroups	A	62	86	76	71	81	6	35
			E	81	86	90	96	86	12	44
6	Evaluation of Questions Generated	Full class	A	89	95	79	84	79	1	6
			E	22	24	61	44	61	7	26

Table 2 shows: 1) the day; 2) the activity engaged in by both classes on each day; 3) the way student effort was organized on each day; 4) the class; 5) the percentage of positive responses to each of the PMR questions on each day; 6) the number of ideas each class produced each day; and 7) the daily percentage of the total number of ideas each class produced on all four days.

Table 2 shows that Class A produced the largest number of ideas on day 1, the day the unit was introduced and requirements were explained before individual work began. Class E, on the other hand, produced the largest number of ideas on day 4, the subgroup day. These observations seem consistent with the previously discussed differences between classes. Class A shows a tendency to produce more ideas in response to expectations clearly explained and structure authoritatively imposed. Class E produces more ideas when the restraints imposed by such structure are absent.

It is instructive to note, however, that the difference between the number of ideas produced on days 1 and 4 in Class A is less than that between days 4 and 2 and days 4 and 6. That is, despite the relative dearth of satisfaction derived from day 4, Class A did produce a number of ideas nearly equal to that produced on the more satisfying day 1, and many more than on the more satisfying days 2 and 6. This observation makes possible a suggestion that members of Class A, even though relatively unsatisfied with day 4 and their participation in the activity that day, find themselves stimulated to the production of ideas on that day.

Using satisfaction as measured by the PMR as a dependent variable, this study offers some support for the hypothesis that participation in subgroups tends to facilitate the generation of new ideas, regardless of reported satisfaction. The hypothesis requires further testing, however, for as the present study reveals, the relationship is affected to an unknown degree, and in an unknown way, by quality differences between the two classes studied here.

The design of this study did not take into account the observed differences between classes. It should have, for it is clear that the relationship between the way student effort is organized and the production of ideas was affected by that characteristic that differentiated the two classes prior to treatment. The design of the study did not sufficiently make comparable the conditions under study, nor did it include provisions for precise data collection. It should have, for it is equally clear that much that might have been learned has been lost with the data necessarily deleted.

What can be concluded? It now seems clear that any general conclusion concerning subgroup production would need to specify both mode of organization and relevant characteristics of the individuals in the groups - perhaps the nature of their talk as well. But there is some evidence here to indicate that participation in subgroups gave students in both classes an opportunity to grasp conceptually and clarify verbally the nature of their private experiences with a book read individually. For Class E there is the clear suggestion that production of ideas covaries with freedom of participation. That is, more ideas are produced when Class E's effort is organized with a high degree of pupil-pupil interaction and with little or no teacher control. Class A, however, shows a tendency to produce more ideas when pupil-pupil interaction is at a minimum, teacher control at a maximum. But Class A produced many ideas on day 4 as well, showing also - but less clearly than Class E - a tendency to produce ideas when pupil-pupil interaction is high and teacher control low.

These conclusions, as well as earlier interpretations, suggest that differences between classes could well be conceptualized in terms of group standards: cooperation in Class A, for example, and competition in Class E. And they could be simultaneously considered in terms of preponderating individual characteristics: self-confidence, for example, low in Class A and high in Class E. Doing so - that is, making hypotheses about the nature of the differences between groups - allows one then to consider the effect of group and personal conditions in combination on whatever ends he hopes to achieve. For the practitioner, this means changing tactics on the basis of continuing observation - observation that makes obsolescent the practices that made it possible. For the theoretician, this means changing strategy on the basis of experimental contingency - contingency that makes superstitious the beliefs that made it viable. Both methods and theories are "right" only as long as it takes to gather information clearly suggesting their successors.

EPILOGUE

This study has made clear the need for identifying the characteristic that varies with different ways of organizing student effort in the classroom. It is suggested that what varied as students worked under the several conditions of this study was the agency exercising control. Though in all three conditions the teacher exercised control over what the students were expected to accomplish, the control of how students were to behave to get it accomplished changed hands, reverting on day 4, for example, to another agency - the subgroup. That is, the teacher relinquished his control of student behavior on day 4 to whatever mechanisms operate in the small group to control behavior therein.

To accomplish a required task, students in the classroom may be governed by three possible agencies: the individual, the subgroup, and the teacher, although this study did not use all three in their pure form. For example, the teacher may make clear the nature of an assignment - explain the task to be accomplished - and say no more. This *would* permit each student to choose his own work methods. This condition requires that the teacher at the same time somehow neutralize any residuum of expectation regarding behavior from preceding days. Or, he may prearrange the tables as was done in this study, make clear the nature of the task to be accomplished, and say no more, allowing the mechanisms operative in a small group to determine students' work methods. Or, after making clear the nature of the task to be accomplished, he may himself control the way students behave to get the job done by such means as a class discussion, even if "indirectly" controlled.

This study also made clear the need for controlling differences among students whose efforts are to be organized. A way to do this is to offer the students a choice, such as allowing them to choose the organizational mode they preferred to work in. Based in part on how each student perceives himself and his ability to profit from participation in the alternatives offered, such a choice would then be a function of the differences among students, hence providing the experimenter with the necessary control over such differences. A second measure, that of predispositions relative to control, could be used as a check on the direction of choice, hence validating overt choice as a function of differences among choosers.

What is suggested is a study in which control and preference, as independent variables, are invoked in such a way that the effects of those variables in combination could be studied for their effects on such desirable ends as satisfaction for the student and production of ideas.

NOTES

1. This study was begun with the counsel of Herbert A. Thelen, Professor of Education, The University of Chicago, and principal investigator under the grant from SSEC. It was completed with the cooperation and help of Mr. John Patrick, teacher in The University of Chicago Laboratory Schools, and Miss Sandra Becich, student in The University of Chicago College.

2. The earlier study ("Subgroup Experience in Two United States History Classes: Organization of Student Effort and the Development of Confidence") was carried out and written by Martha Porter.

3. Both studies, concerned with answering in methodological terms questions about social studies education, were designed to test assumptions underlying Herbert A. Thelen's model of inquiry for teaching. This model pictures education by inquiry in phases: 1) confrontation, with material selected and arranged for arousal in the student of a "problematic state"; 2) emergence into awareness, of the nature of the problem induced; 3) collection of testimony, from students, preparatory to the formulation of problems for investigation; 4) conducting of investigation, toward solution of the problems formulated; 5) organization, of findings, and report; and 6) reformulation, of issues joined by a comparison of findings and prior knowledge.

4. In The University of Chicago Laboratory Schools, there is no eighth grade. Students go from the seventh grade to their freshman year in high school; hence the adjective prefreshman.

5. The post-meeting reaction questionnaire, a reproduction of which follows these notes, included questions students usually did not answer. For this reason, questions 7 and 8 were not used.

6. A reproduction of the idea questionnaire follows these notes. Because of the questionnaire's complexity - and the confusion caused by its insufficiency for use as days were subtracted from and added to the experiment's calendar - students were consistently able only to report the day on which their ideas occurred to them. Even this required further explanation during the latter days of the experiment, since spaces on the questionnaire did not correspond any longer to the calendar day.

7. This novel was intended as a confrontation used at the beginning of an inquiry into the territorial expansion of the United States after the Revolutionary War. No Other White Men was written by Julia Davis.

8. On day 3, Class A spent only a few minutes in the classroom before leaving for a school-wide assembly.

9. Because tables had been so prearranged and students told to seat themselves as they wished during the earlier experiment, no instruction had to be given on day 4. Students arranged themselves in subgroups according to their own preferences without comment from the teacher. This voluntary association in subgroups adds a dimension to this experiment not studied. If it can be assumed, for example, that the groups were formed as they might have been on the basis of a sociometric instrument, one might ask what effects this voluntary association had on the measures of satisfaction and idea production.

10. The PMR was not administered on day 5 because each class had a visitor who spoke for the remainder of the period on an unrelated topic.

11. Days 3 and 5 have been deleted from Table 1: day 3 because Class A met for only a part of the period while Class E met for the whole period; day 5 because it was devoted to an altogether unrelated activity in both classes.

    Positive response is defined as one appearing in either of the two spaces farthest to the right in both four-choice and five-choice questions. See the reproduction of the PMR on the following page.

Name______________________ Teacher______________________

Period______________________ Date______________________

1. Today's activity was ___ individual work ___ subgroup discussion ___ class discussion ___ other.

2. How did you feel the activity was today?

   no good | poor | all right | good | excellent

3. How clearly did you understand what the activity was all about?

   not at all | vaguely | pretty well | perfectly

4. How satisfied were you with your participation in the activity?

   really disappointed or discouraged | rather disappointed | fairly well satisfied | really delighted and pleased

5. During how much of the time did you feel that the opportunity existed for you to participate in the activity?

   never | rarely | some of the time | most of the time | always

6. When you participated, how often did you do or say what you really wanted to?

   never | rarely | some of the time | most of the time | always

7. What was the best thing that happened?

   ____

   ____

8. What was the worst thing that happened?

   ____

   ____

Name ______________________ Date __________ Teacher ______________ Period __________

APPEAL

5 Very much want to explore
4 Looks interesting-- am not sure
3 So-so
2 No longer so interesting
1 Guess I'll drop it

SOURCE

Where did the idea come from?

N No Other White Men
OP Other reading
TS Talking with students
TT Talking with teacher
TP Talking with another person
I It just came to me
FT From the teacher
FS From another student
FP From another person
FM From within myself

TIME

When did the idea occur to you?

DC During class
OC Outside of class
PA While reading the assignment
TA While thinking about the assignment
DO While doing something else
TO While thinking about something else
P While just relaxing

	Monday	Tuesday	Wednesday	Weekend	Monday	Tuesday
Ideas to explore for my essay	Appeal Source Time	Appeal Source Time	Appeal Source Time	Appeal Source Time	Appeal Source Time	Appeal Source Time

GUIDE FOR SUBGROUP ACTIVITY

Purpose of Today's Subgroup Activity - To compile a list of acceptable questions that have something to do with the topic, Extending United States Government to New Territorial Possessions.

Instructions for Today's Subgroup Activity

1. Each subgroup should choose a chairman and a recorder. It is the chairman's job to start discussion and to keep the discussion relevant.

   It is the recorder's job to keep a written record of the questions that the group selects as acceptable. This list of acceptable questions should be handed in to the teacher at the end of the period. The names of all group members should be signed under the list of questions.

2. Following are some standards that may help you to decide which questions are acceptable and which questions are not acceptable.

   a. The question must be relevant.

   b. The question must not be too broad in scope. For example, the question, how did the United States acquire new territorial possessions, is too broad. By contrast the question, "How did the United States acquire the Oregon territory?" is more narrow and focuses on only one aspect of the broad question of United States territorial expansion.

   c. The question must be one to which an answer can be easily and readily found. For example, the question, "How did the United States acquire the Oregon territory?" can be answered readily and easily through reading and interpreting many available primary and secondary sources. By contrast, the question, "Would the United States have retained possession of the Louisiana territory if all the Indian tribes had banded together in a confederation, allied with hostile European nations, to fight the United States?" is not capable of being answered exactly and is inappropriate.

   d. The question must be precise and easily understandable, not vague and incoherent.

PART II

SUBGROUP EXPERIENCE IN TWO UNITED STATES HISTORY CLASSES: ORGANIZATION OF STUDENT EFFORT AND THE DEVELOPMENT OF READINESS

Martha Porter and Keith Elkins

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BACKGROUND AND PURPOSE[1]

An important segment of Thelen's model of inquiry for teaching calls for interaction of students in subgroups.[2] The fundamental assumption of the researchers in this study was that the subgroup is a milieu which provides for transition from individual, private concerns to understanding of and public commitment to topics to be investigated by the whole class. Collateral assumptions were that participation in self-chosen subgroups 1) gives students an opportunity to try out, hence clarify, their ideas; 2) helps prepare them to listen to the ideas of others; and 3) increases their confidence. Further assumptions were that through such participation, and with increased confidence, the students tend to acquire the willingness and ability to formulate and organize ideas, and a sense of commitment to the subject under inquiry. Concomitantly, it was assumed, that students would develop a "readiness" to make these acquisitions manifest in class discussion, written reports, oral reports, or other activities which they had selected or had been assigned to carry out.

The researchers were concerned in this experiment with the development of readiness to undertake the writing of an essay on a topic assigned by the teacher. They studied the relationship between student participation under two modes of classroom organization of effort, and the development of readiness as reported by the students participating. They also studied the extent to which students reported satisfaction after having worked in subgroups.

The experiment considered here covers two consecutive class periods during October, 1964. Two prefreshman U. S. history classes were used.[3 and 4] The first of these classes, Class A, had 21 members (9 girls, 12 boys) and met daily from 8:55 am to 9:40 am. The second, Class E, had 23 members (9 girls, 14 boys) and met daily from 12:10 pm to 12:55 pm. The work of both classes - reading, topics for discussion, etc. - was parallel.

During the course of data analysis, indications that there might be marked differences between Class A and Class E were discovered. Conversation with Mr. Patrick confirmed the suspicion that the researchers were considering two distinct populations. According to Mr. Patrick, Class A had some students with lower IQ's and very few with exceedingly high IQ's. Four or five students were taking elementary school arithmetic. Six students were new to the Lab school. Class A was not very verbal and tended to be slightly passive. The class also tended to be homogeneous; that is, there were no visible factions or cliques.

Class E presented a different picture. Class E contained a number of students with very high IQ's and no students with low IQ's. Six or seven students were taking advanced math. None of the students were new to the Lab school, and students in this class had formed various factions and cliques. These students were very verbal and apparently eager to "shine" before their classmates and the teacher.

PROCEDURE

Several days prior to their meeting in subgroups, on the first of the two days covered by the experiment, students in both classes received a packet of documents pertaining to the American Rebellion.* From a clearly worded, dittoed study guide which accompanied the documents and from instructions given orally in class, the students knew that they were to begin using these documents as primary sources in preparation of an essay on the American Rebellion. This was to be written after the completion of the experiment.

On Tuesday morning, October 27, students in both classes entered their regular classroom, which had been prearranged for subgroup work by placement of chairs around seven small tables.[5] Class A divided very symmetrically into seven groups of three: four trios of boys, three of girls. Class B broke into seven groups of different size. The boys formed one quartet, two trios, and one duet; the girls formed two quartets. The seventh group in Class B contained two boys and a girl who had come in at the last minute and rather reluctantly joined the boys.[6]

As soon as the students were seated around their tables and quiet, they were given a questionnaire designed to elicit responses having generally to do with readiness to work in preparation for the forthcoming essay on a topic assigned by the teacher.** After the questionnaires had been collected,[7] students in both classes received almost identical instructions. Mr. Patrick told the students that they were to consider the documents in two steps. Step 1 was to examine each document individually for answers to the following question: What does each of the primary sources (i.e., the documents in the packet) tell you about why certain British colonies in North America rebelled against the mother country? Step 2 was to examine the documents together to see how they related to each other and how they provided more general answers to the larger question: What causes rebellion against government?

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* A questionnaire which lists these documents is appended, p. 19.
** A reproduction of that questionnaire is appended, pp. 18-19.

The students were then told that working in subgroups would give them an opportunity to exchange ideas, to trade information, and to help one another. They were also given the reassurance that some of the groups might not get to step 2. Immediately following these instructions, the students began to work, conversing quietly among themselves. Mr. Patrick circulated through the room, stopping to assist the several subgroups, mostly helping with step 2 - seeing the relationships among the various documents. Students in Class A spent about 20 minutes in subgroups; students in Class E, about 25 minutes.

Five minutes before the period ended, students were again given the questionnaire described above and, in addition, a post-meeting reaction sheet (PMR) designed to elicit responses having to do with the satisfaction felt by the students after having worked in subgroups.*

The following day, Wednesday, October 28, the classes met as usual - in full-class session. A completely new topic - the concept of sovereignty - was introduced to both classes. In the teacher-led discussion that followed, students were guided in seeing how the concept of sovereignty provided a principle around which the ideas they had so far generated could be organized, and the documents they had so far considered could be compared, in preparation for the forthcoming essay on the causes of the American Rebellion. Four minutes before the end of the class period, Mr. Patrick again distributed the first questionnaire (described above), which was completed in less than three minutes, but he did not administer the PMR.

The students in both classes, then, worked succesively under two conditions of classroom organization of student effort: in subgroups and in full-class session. These conditions constitute the independent variable in this study. The first questionnaire described above concerns the dependent variable: readiness. Given before and after experience in subgroups and, in effect, before and after experience in full-class, teacher-led discussion, this questionnaire included an assessment by each student of his own readiness to undertake the writing of an essay on a topic assigned by the teacher; an estimate of the value to him of several individual and interactive activities preliminary to such writing; and a report on the usefulness of the various documents for his thinking about writing. It also included two questions designed to determine the extent to which students found themselves stimulated by the methods and materials employed during the two days of the experiment. This questionnaire, then, provided the researchers with an index to changes in reported readiness across the two successive conditions of the experiment. Though not studied systematically, satisfaction with work in subgroups, as measured by the PMR, constituted an additional dependent variable.

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* A reproduction of the PMR is appended, p. 20.

This design generates the following general questions:

1. What changes in readiness to write an essay on a topic assigned by the teacher occur when students work in subgroups?

2. What changes in readiness to write an essay on a topic assigned by the teacher occur when students engage in full-class, teacher-led discussion?

3. Tangentially, what satisfaction do students report following experience in subgroups?

FINDINGS
TABLE I

NUMBER AND PERCENTAGE OF STUDENTS IN CLASS A AND CLASS E RESPONDING POSITIVELY TO ITEMS ON THE "READINESS" QUESTIONNAIRE, INCLUDING PERCENTAGE OF CHANGE IN BOTH CLASSES ACROSS CONDITIONS.
N = 21 (A); N = 22 (E)

	QUESTIONNAIRE ITEM	CLASS	NUMBER AND PERCENTAGE* OF + RESPONSES, BY ORDER OF ADMINISTRATION						PERCENTAGE OF CHANGE**	
1.	How ready do you feel to begin drafting your report of the reasons for the American Rebellion?	A	15	15	18	71	71	86	0	14
		E	3	14	20	14	64	91	50	27
2.	How intriguing, exciting, or vital do you find our methods of studying the Rebellion?	A	19	20	20	90	95	95	5	0
		E	20	22	22	91	100	100	9	0
3.	Which of these things would help you most at this point?									
a)	Try out on my friends the ideas I might put in my report.	A	11	16	14	50	73	64	23	-9
		E	5	9	7	24	43	33	19	-9
b)	Try out on the teacher the ideas I might put in my report.	A	11	6	6	52	29	29	-29	0
		E	14	13	13	64	59	59	- 4	0
c)	Discuss with friends what is contained in the primary sources.	A	8	16	14	38	76	67	38	-9
		E	18	15	17	82	68	77	-14	9
d)	Start writing.	A	6	8	9	29	38	43	9	5
		E	2	2	13	9	9	59	0	50
e)	Get the teacher to give fuller explanations or instructions.	A	9	6	3	43	29	14	-14	-14
		E	11	7	6	50	32	27	-18	- 4
f)	Give assistance to a friend.	A	5	6	5	24	29	24	5	- 5
		E	9	12	12	41	54	54	13	0
g)	Find out what other students are going to do about the assignment.	A	11	12	9	52	57	43	5	-14
		E	9	17	15	41	77	68	41	- 9
h)	Read books or other sources that were not assigned.	A	7	6	4	33	28	19	- 5	- 9
		E	10	13	9	45	59	41	14	-18
4.	How intriguing, exciting, or vital do you find the written accounts of the Rebellion?	A	19	20	19	90	95	90	5	- 5
		E	21	21	21	95	95	95	0	0
5.	How central, useful, irrelevant or unclear do you find the documents?[8]	A	17	19	20	82	92	99	21	7
		E	16	18	20	71	80	89	9	9

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* Percentages have been rounded to nearest unit.

** Sub = Subgroups' experiences; Disc = Full-class discussion experience.

Table I shows: 1) each question on the "readiness" questionnaire; 2) the number of positive responses given to each question by members of Class A and Class E; 3) the corresponding percentages of positive responses to each question; 4) the percentage of change produced while in subgroups; and 5) the percentage of change produced while in full-class discussion.

On four items, the two classes responded nearly identically. Of these four items, three are mostly irrelevant to the questions asked in this research. These items tell us that at the beginning of this experiment, all but one or two students found the classwork and the documentary accounts of the Revolution "exciting" and "intriguing." After the subgroup and discussion experiences, one or both, the holdouts went along with the overwhelming majority expression. In general these responses probably reflect the fact that the students are very pleased with their teacher. In addition, the four or six students in the two classes who did not find the documents very useful initially, were reduced in ranks to one or two by the end of the subgroup and discussion activities. There is no significance to attach to this beyond noting that both groups were getting closer to the time when they would write reports based quite largely on these self-same documents.

The fourth item, on which the classes responded almost identically, is of interest because it is consistent with anticipations: as the classes moved closer to readiness to write reports, their dependence on the teacher lessened. Thus in Class A, the 9 who wanted more instructions from the teacher decreased to 6 during the subgroup activity and thence to 3 during the teacher-led discussion. In group E, the initial 11 dropped to 7 and then to 6. It appears that both the subgroup and discussion activities contributed to the lessened dependence, with the subgroup activity somewhat more influential than the discussion in the case of Class E - but equally influential in the case of Class A, a finding which is in line with some of the known differences between the classes, as will be explained later.

In considering the remaining items, which do tend to reveal differences between the influences of subgroups and discussion activities as well as differences between the classes, two ideas stand out: the classes entered the study with very different degrees of readiness to concoct a report; and they developed readiness by markedly different routes. In other words, the uses they made of the subgroup and discussion activities are quite different.

Let us consider first the gross picture of "readiness." Two items report more or less directly - but with different degrees of rigor - the readiness to compose a report. In Class A, at the start of the experiment, 15 persons (71%) claimed to be ready to begin drafting a report, and 6 of them (29%) even said they were ready to start writing the report. By contrast, in Class E, only 3 persons (14%) were ready to begin drafting the report and only 2 persons (9%) wanted to start writing. Thus Class A in contrast to Class E would appear to have had their ideas more thoroughly formulated, and their commitments to ideas more definitely made.

What happens to readiness during the two activities of the experiment? During the subgroup discussion in Class A, no additional persons claimed to be ready to start writing. In Class E, no additional persons became ready to write, but 11 additional students claimed to be ready to draft the report. It appears that the subgroup activity was most useful in promoting the earlier stage of readiness (drafting) than in promoting the later stage (writing). Consider now, however, the apparent effects of the discussion with the teacher. During this discussion, three of the remaining six Class A students who had not been ready to begin drafting became ready; and one more person was prepared to write. Of the remaining eight students not ready to draft in Class E, six became ready to draft; and eleven (50%) of the class became ready to write. The most marked effect of class discussion with the teacher is on the readiness to write. In short, the most pronounced effect of the subgroup activity is at the earlier stage of readiness, and that of the class discussion with the teacher is at the later stage.

It is clear, then, that one difference between the two classes is that they started with a far different readiness to write the report, and the class furthest from being ready was most influenced (and influenceable) by subgroup experience. This is very much in line with our expectations: that interaction with peers is likely to be especially useful when one is trying to formulate or "get hold" of his thoughts and feelings.

But the rest of the data helps us to reconstruct more of the processes the two classes were engaged in. It also poses a rather interesting alternative explanation for the data so far considered. The alternative is that Class E is just "naturally" more interactive, more interpersonally oriented, than is Class A, not because it is less ready and therefore needs others to help build self-confidence (etc.) but rather because the individuals differ systematically in "personality" between the classes. Regardless of whether it is lesser readiness or greater interpersonal concern that accounts for it, it is nevertheless evident that Class E tends to use interpersonal interaction as a way to deal with interests and needs whereas Class A uses interpersonal interaction less and structured assignments and documents more.

Let us consider this second point from the standpoint of the initial data. With respect to interaction, 11 in Class E (50%) and 5 in Class A (24%) felt that the most important next step was to try out ideas with friends. After subgroup discussion, even more persons felt this way, with the greater gain in Class E; during teacher-led discussion, a few persons lost interest in discussions with friends, but the number is smaller in Class E than in Class A. Thus the class with more initial interest gained more and decreased less than the class with lesser initial interest. In the final count, one-third of Class A wanted such discussion compared to almost two-thirds of Class E.

In a similar vein is the information about "give assistance to a friend." Initially, 5 members in Class A (24%) and 9 in Class E (41%) felt this next step had highest priority. During subgroup discussion, the numbers went up by one and three respectively in the two classes. During teacher-led discussion, the number in Class A dropped back one, to the original 5, whereas it held steady in Class E. Thus, discussing ideas with friends and giving assistance to friends followed the same general pattern - which might be called simply mutual facilitation by peers - and Class E had the tendency more strongly than did Class A.

The third peer-interactive item contains two elements: friends and primary sources. Performance of the two classes on this item seems to reflect both the different amount of readiness to begin drafting the report and the differing tendency to utilize interaction with others. In short, 18 in Class E (82%) and 8 in Class A (38%) initially wanted to discuss with friends what was contained in the primary sources. Following subgroup activity, the numbers are 16 and 15, representing a marked increase in the one class and a small decrease in the other. Further changes during the teacher-led discussion are slight. In general, the simplest summary statement is that Class E had a gregarious interest in discussing things with peers, and that this interest remained substantially the same throughout both activities; whereas Class A had much less interest in peer discussion per se but needed clarifying discussion in order to decide how to use the source materials, and they could and did use each other for this purpose. In a sense, Class E took for granted the opportunity to talk with each other, whereas Class A saw such conversation as instrumental to work and as justifiable in terms of demands of work.

Another item that involves the two components of readiness and gregariousness is 3g: "Find out what other students are going to do about the assignment." What other students will do is, in effect, a work norm and yet at the same time, it is a course of action. One might be interested in it either as a way of gauging how much work is expected (specifying the product) or as a way of deciding how to go about doing the job (defining the procedure).

Presumably, if one already has plans for how to do the job, he would check with others to set up criteria that the product must satisfy; on the other hand, if one had no plans of his own, he might try to get plans from someone else. Thus our interpretation of interest in finding out what others will do will depend partly on how far we think the planning has progressed. In Class A, there was a great gain in interest in discussing primary sources with others during subgroups, and this suggests that planning was by no means complete. But it also suggests that the class was trying to figure out for itself how to write the report. The number of students interested in finding out what others will do remained mostly unaffected by subgroup experience (an increase from 11 to 12), suggesting that the need was not satisfied and that, since the opportunity existed, something else more important was done with the opportunity.

In Class E, however, there was a dramatic jump from the nine students initially interested in the plans of others to the seventeen at the end of the subgroup discussions. Since this class was still at an early stage of planning at this point, the field was presumably open for a range of suggestions from students to each other. In general, we anticipated that stimulation by alternative, possibly conflicting, suggestions would be one of the functions that is facilitated by subgroups during early stages of planning; and the data are consistent with this view.

The interest in reading "books or other sources that were not assigned" confirms the view that planning is indeed going forward during the experiment. Clearly the kind of stimulation one would be seeking in unassigned documents belongs to early or even pre-planning phases. As planning moves forward one would expect this interest to decrease. In Class A the seven students initially interested decreased to four; in Class E, the figures are ten and nine. The shifts during the subgroups and class discussions add further confirmation of the picture: in Class A, the decrease in interest fell across both activities, whereas in Class E, interest in reading unassigned sources went up (from ten to thirteen students) during subgroup discussion and then fell during class discussion. Once again the data point to the notion that Class E was at an earlier stage of planning than was Class A during the subgroup activity.

There is another possible interpretation, however, and that is that the desire to read unassigned materials is in fact a symptom of independence or rebelliousness. If Class E is more inter-personally oriented than Class A, then the assertion that one plans to go off on his own may be more a rejection of authority than a firm plan of action. If the authority at issue is that of action. If the authority at issue is that of förm, (the demand that a written report be properly organized, contain sufficient content, etc.) then our data are silent. If, however, the authority at stake is that of the teacher, then our data enable us to reject the hypothesis. The item "try out on the teacher the ideas I might put in my report" should be rejected most in the "rebellious" group; actually Class E showed no change of any consequence on this item, whereas Class A, which is not "rebellious" but simply more "ready," dropped from 11 students to six who had this interest. Similarly, on "get the teacher to give fuller instructions or explanations," an item in which the two groups show similar trends, the wish for more instructions dropped off more during class discussion in Class A (from 6 to 3) than in Class E (from 7 to 6). If either class could be said to have been increasing its independence, it is Class A; and the basis for the action is merely that its planning was firmed up earlier.

In conclusion, one can say that the data hang together very well and that a coherent picture emerges: Interest in interaction with peers (which is facilitated in subgroups) is greater during early stages of planning when the "field" is still open, anxieties presumably greater, and the need to "think out loud" is stronger. As plans develop, decreases occur in reliance on the teacher, need for peer interaction, and desire to browse in unassigned pastures. The "commitment" moves from persons to work.

TABLE II

NUMBER OF STUDENTS IN CLASS A AND CLASS E RESPONDING POSITIVELY TO QUESTIONS ON THE POST-MEETING REACTION SHEET

	CLASS A N-21	CLASS E N-22
1. Feeling about the subgroup (good - excellent)	17	18
2. Freedom to speak (always - frequent)	19	19
3. Understanding of instructions (good)	21	21
4. Satisfaction with part played (good - high)	20	20
5. Extensiveness of participation in discussion (everyone - everyone equally)	18	14

We considered the possibility that the differences between the classes might just be due to their personality compositions rather than to their stage of readiness. We cannot rule this out, for greater interpersonal orientation and less readiness to work would have similar effects. We can, however, say that it is unlikely that there is a continuing and strong general disposition for Class E to be more attracted to subgroup activity than for Class A. The evidence is in Table II above. Both classes were equally favorably disposed toward their subgroups. There is a slight indication that certain members of Class E tended to dominate their subgroups at the expense of certain others. But there is no support for the notion of a greater attractiveness of subgroups.

Our final word then, is that Class E may have been less ready initially because of its composition; and the statement that the group has less readiness to work, (e.g. write a report) is dynamically the same as the statement that it is interpersonally oriented. But these are theoretical considerations that in no way change the facts about the relationships between readiness and utilization of subgroups.

GENERAL CONCLUSIONS

Once cannot say that participation in subgroups is advisable for all classes under all circumstances. This very preliminary study revealed that two supposedly similar classes were in fact two markedly different groups, and that each group contained distinct individuals. Despite these differences between classes, we found that subgrouping made sense in both. But hard questions remain concerning the composition of the subgroups, the purposes of subgroups, and the place of subgroups in a unit of study.

As was discovered in this study, other variables have much to do with the effects of subgrouping: characteristics of individuals, for example, and the arrangement of these characteristics in subgroups, (i.e., group composition). Thus qualified, one may say that this study supports the hypothesis that participation in subgroups tends to increase a student's confidence and to move him toward readiness. Apparently subgroup activity can generate new ideas and a desire to get more information. It is clear, finally, both from observation and the data, that students in both classes derived genuine satisfaction from being able to talk about their ideas with friends.

NOTES

1. Whatever this study has to offer the student of classroom method owes its existence to the continuing counsel of Herbert A. Thelen, Professor of Education, The University of Chicago, and principal investigator under the grant from the SSEC, to the cooperation of John Patrick, teacher in The University of Chicago Laboratory Schools; and to the help of Sandra Becich, student in The University of Chicago College.

2. This study, concerned with answering in methodological terms questions about social studies education, was conceived in order to test assumptions underlying Herbert A. Thelen's model of inquiry for teaching. This model pictures education by inquiry in phases: 1) *confrontation*, with materials selected and arranged for arousal in the student of a "problematic state;" and 2) *emergence into awareness*; of the nature of the problem induced; 3) *collection of testimony*, from students, preparatory to the formulation of problems for investigation; 4) *conducting of investigations*, toward solution of the problems formulated; 5) *organization*, of findings, and report; and 6) *reformulation*, of issues joined by a comparison of findings and prior knowledge.

   Central in the model as pictured is the second phase, prototypically employing subgroups to facilitate the conceptualization and verbalization of felt problems necessary to the asking of real questions. There lies the researchers' interest in testing the assumptions underlying this phase.

3. In The University of Chicago Laboratory Schools, the seventh and eighth grades are combined in a single year of study - the *prefreshman* year. Thus, prefreshmen are between twelve and thirteen years old.

4. It should be noted here that this experiment represents a fortuitous meshing of interests. During the course of a conversation with the researchers, Mr. John Patrick mentioned his intention to have his prefreshman U. S. History classes work in small groups. Mr. Patrick's willingness to have questionnaires introduced during the class periods was very much appreciated.

5. It should be noted that Class A is also Mr. Patrick's homeroom class. Mr. Patrick reports that students were stunned to find the room arranged differently, some even writing complaints on the blackboard, e.g., "Why did you do this without asking us?"

6. This subgroup of two boys and a girl turned up entire in the number of students who found the subgroups generally "poor," as indexed by the PMR.

7. Almost ten minutes were consumed in Class A, largely because the dittoed questionnaires were difficult to read. Class E took about six minutes, using freshly dittoed questionnaires.

8. The numbers representing the responses to this item must be interpreted differently from those representing other responses on the questionnaire because the responses are ordered differently. Thus, the 17 in the first response column for Class A means that approximately 17 (an average figured over documents) persons found all documents either central or useful.

9. Positive response is defined as either one of the two most positive responses to both four-choice and five-choice responses on both the questionnaires.

Teacher____________________ Name____________________ 1 2 3

Period____________________ Date_______________ Group________

1. How ready do you feel to begin drafting your report of the reasons for the American Rebellion?

_____ Definitely ready now
_____ I guess I am ready - not sure
_____ Have some ideas, but not yet ready to write
_____ Very much at sea about the whole assignment

2. How intriguing, exciting, or vital do you find our methods of studying the Rebellion?

_____ pretty dull   _____ so-so   _____ somewhat interesting   _____ very exciting

3. Which of these things would help you most at this point? In front of each statement below, place a check in the appropriate column.

Very Helpful	Somewhat	Maybe - Maybe not	Definitely not	
				Try out on my friends the ideas I might put in my report.
				Try out on the teacher the ideas I might put in my report.
				Discuss with friends what is contained in the primary sources.
				Start writing.
				Get the teacher to give fuller explanations or instructions.
				Give assistance to a friend.
				Find out what other students are going to do about the assignment
				Read books and other sources that were not assigned.

Teacher____________________ Name____________________ 1 2 3

Period____________________ Date________________ Group________

4. How intriguing, exciting, or vital do you find the written accounts of the Rebellion?

____ pretty dull ____ so-so ____ somewhat interesting ____ very exciting

5. In front of each document, place a "C" if the document is Central to your report, a "U" if it is Useful but not vital, an "I" if it is Irrelevant, a "D" if you Don't know yet.

____ "A Letter to the Inhabitants of the Colony of Massachusetts," by John Adams

____ The Townshend Revenue Act--June 29, 1767

____ Graphs and charts relating to trade between colonies and England

____ "Commentary about Colonial Economic Progress," by Lawrence Henry Gibson

____ The Navigation Act of 1660

____ The Proclamation Act of 1763

____ The Stamp Act

____ The Stamp Act Congress: Resolutions

____ The Declaratory Act

____ Declaration and Resolves of the First Continental Congress

____ Letters from George III to Lord North

Teacher__________________ Name__________________ 1 2 3

Period__________________ Date______________ Group______

1. How did you feel the subgroup was today?

no good	poor	all right	good	excellent

2. How often did you find yourself wanting to say things in your group, but for one reason or another you did not actually say anything?

never	a few times	fairly often	frequently	very frequently

3. How clearly did you understand exactly what the subgroup was supposed to do today?

not at all	vaguely	pretty well	perfectly

4. How satisfied were you with the part you played in the subgroup?

really disappointed or discouraged	rather disappointed	fairly well satisfied	really delighted and pleased

5. To what extent did everyone take part in the discussion?

one person dominated	two persons carried the ball	everyone talked at least once	everyone talked equally

PART III

CLASS DISCUSSION IN A UNITED STATES HISTORY CLASS: RELATIONSHIPS BETWEEN CHARACTERISTICS OF A CONTRIBUTOR AND JUDGMENT OF CONTRIBUTION

Keith Elkins

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BACKGROUND AND PURPOSE

In many of the more recently enlightened classrooms, teacher-led, or teacher-guided, classwide discussion is often used to effect learning. In virtually all classrooms it is sometimes used for this purpose. It is clear to those assessing products of the classroom as well as to those observing processes in it that class discussion may or may not effect learning. If we are interested in effecting learning through class discussion, then, it would seem necessary for us to know those conditions under which so widely used a pedagogic device does or does not effect learning.

It is assumed here that class discussion does allow the student to learn from the contributions of others; further, that student learning from others is determined by how useful he perceives these contributions. These assumptions permit us to ask the following questions for gauging learning as effected by class discussion: 1) How useful to the class are contributions from a class discussion? 2) To what extent does one student find useful the contribution of another? Quantitative answers to these questions should allow us then, to view whatever learning has been effected by class discussion against some of the conditions under which such discussion is conducted.

These are the questions to which the researchers addressed themselves as they observed a class discussion and collected student responses to the contributions of their classmates in that discussion. These responses, the researchers felt, would be affected in some way and to some extent by the person making the contribution, the kinds of contributions made, and the reaction exhibited by the teacher to the contributions. That is, there could be differences according to the sex, intelligence or achievement, and popularity of the contributor; according to the substance of the contribution; according to the concomitant affective characteristics of the contribution; and according to the nature of the teacher's reaction to the contribution, whether supportive or punitive for example.

This study will focus rather narrowly on the relationships occurring between certain characteristics of contributors to class discussion and the extent to which their contributions are perceived as useful by other members of the class. It was hoped that configurations and patterns can be discovered in the data gathered and displayed, and that these discoveries will cast doubt on some entrenched ideas and light on some emerging ones.[1]

PROCEDURES AND DESIGN

Two prefreshman United States History classes in The University of Chicago Laboratory School, both taught by Mr. John Patrick, were used in this study, carried out in the spring of 1965.[2] Since data in one of the classes were inadequately gathered and are hence unusable, only the part of the study that involved the other class will be reported here.[3]

The class met at 8:55 a.m. every weekday except on Thursdays when it met immediately after their homeroom period in the same room with the same teacher. It was composed of nine girls and twelve boys. Among these 21 students were four who read at the (Lab School) fourth-grade level, five who were new to the Lab School as they began their prefreshman year, and two who were repeating their prefreshman year. Members of the class asked few questions about class assignments at the time they were made. They asked questions individually as unanticipated difficulties arose during the course of the class period, or in concert as unexpected implications became clear at the end of a class period. All together decorous, the class had no students who spoke impulsively or compulsively; the ones who spoke most often were brief. According to comments by the teacher, and observations by the experimenters, members of the class "listened to each other" and "built" on each other's comments.[4]

Sitting where he chose at two- or three-man tables arranged in a single circle that included a place for the teacher, each student had in front of him a small 2 x 2 x 3 inch gray box on which there were two buttons, a green one at the top (or away) and a red one at the bottom (or close). These button-boxes were connected by wire to two twelve-plug collection boxes, thence by cable to a battery of two, twenty-pen event recorders.[5] Each of the twenty green buttons was hooked to a pen in one of the event-recorders, which was so equipped that all twenty pens made continuous green lines on a running paper tape.[6] Each of the red buttons was similarly hooked to a pen making a continuous red line on a tape in the other event-recorder. Depressing any button caused the pen to which it was connected to take a sideways jump of perhaps an eighth of an inch, leaving a rectangular blip in the line traced on the running paper tape. Each of the 19 students used in the study was thus able to record one kind of response on one event-recorder, another kind of response on the other event-recorder.[7]

By pressing the buttons facing them in one of four predetermined ways, the students were to record their responses to each contribution in the class discussion. When the teacher raised his hand after each contribution, they were to press the green button if they found the contribution "useful" to them in their preparation for a "written exercise," the red button if they found the contribution "useless." If they found the contribution altogether useful or useless, they were to press the appropriate button once - twice if they found it partially so.[8]

The observer in the class also had controls. By pressing a button at his left hand, he could: 1) override the event-recording circuit of any of the students in the class; 2) fire a variable-pitch tone oscillator; and 3) record the oscillator's tone on the sound tape used to record the entire class session. At his right hand, the observer had a chart whose rows he had previously coded according to Morse. As each contributor spoke, his name was entered in sequence in the space beside a letter of the alphabet, and then the letter was recorded in Morse code on the sound tape and both paper tapes. All this was done to make cross-referencing simpler.

In addition to recording the data described above, information concerning academic aptitude, academic achievement, and social standing in the class was gathered for each student in the class. These data were on file in cumulative folders in the Laboratory School Guidance Office. To index academic aptitude, Henmon-Nelson IQ's were gathered; to index academic achievement, grades in social studies for the 1964-65 academic year and STEP scores in writing and social studies, earned in March of 1965, were gathered; to index social standing in the class, a sociometric instrument, administered in May, 1965, was used.[9]

It should be noted again that the entire class session was recorded by use of a lavalier microphone suspended from the ceiling in such a way that it was nearly equidistant from all persons seated at the circle of tables mentioned above. Recording the entire class session made it possible to assess the contributions made by participants in the class discussion and the responses made by the teacher to those contributions.

In a sense, this exploratory study by the researchers began with the evaluation of a contribution to class discussion and worked toward an explanation of why that contribution was so evaluated, an explanation in terms that had to do with what kind of person made the contribution. Doing so, they hoped, would allow them to discover some of the conditions under which learning may be effected by class discussions, or at least some of the conditions under which learning may not be so effected.

FINDINGS

In Table I below are recorded all responses to every contribution made on the day data were gathered. In the left-hand column the students who attended class that day are identified according to the number of the button-box in front of them.

Grouped according to sex, the numbers are sequentially arranged within groups. Using the same grouping along both vertical and horizontal dimensions of the Table produces quadrants in which are represented the responses of boys to the contributions of both boys and girls across the top and the responses of girls to the contributions of both boys and girls across the bottom. Responses are represented as follows: 1's and 2's stand for judgments of "altogether" and "partially useful" respectively; 1's and 2's preceded by a hyphen (e.g. -1) stand for judgments of "altogether" and "partially useless" respectively. An empty cell means no judgment was made. Totals appear in the margins.

This arrangement of data enables one to see by reading down, how each contribution was judged by every student, and, by reading across, how each student judged every contribution. It should be remembered that: 1) All students had been instructed to respond when the teacher raised his hand after each contribution; 2) Each student could make either a positive or a negative judgment of a particular contribution, but not both.

TABLE I

Class members are identified by number (of button box) and grouped by sex vertically. Contributors are identified and grouped the same way horizontally. Multiple horizontal entries mean multiple contributions. Rows contain each student's judgments of all contributors; columns contain judgments of each contributor by all students. Judgments of 1 and 2 mean "altogether" and "partially useful" respectively; -1 and -2, "altogether" and "partially useless" respectively. An empty cell means no judgment was made. Totals appear in the margin.

																										Totals	
ID	1	5	5	6	6	6	8	11	12	12	12	13	14	14	4	4	9	10	10	17	18	18	18	19	19	(-)	(+)
1	1	-1	1	-2	-2	1	1	-2	2	1	2		2		2		2		2	2	1	2	1	-2		5	15
2	1	-1	2	2	1	2	2	1	1	1	2		2		-2		1		1	2	1	1	2	2	2	2	19
3	1	-2	2	2	2	1	2	2	2	1	1		2		2		2		-2	2	2	2	2	2	2	2	19
5	1	2	1	1	1	2	2	2	2	1	2		-2		2		2		2	2	2	1	2	2	2	1	20
6	1	-2	2	1	1	1	2		-2	1	-2		-1		-2				1	1	2	1	-2	2	2	6	12
7		-1	2	2	1	2	2	1	2	1	2		-2		2		-2		1			1	2	1	2	3	15
8	1	1	2	2	1	2	2	2	2	1	2		-2		-2		1		2	-2	1	-2	1	2	2	4	17
11	1		2	1	2	2	2	2	2	1	1		-1		2		2		2	2	2		2	-1	2	2	17
12	1	-1	1	-2	1	-2	1	-2	1	2	1		-2		2		2		2	2	1	2	2	-1	2	6	15
13	1	-1	2	1	2	1	2	-1	2	1	2		-2		2		-1		2.	2	2	1	1	2	2	4	17
14	2		1	1	1		-1	1	1	2			1		-2		2			1	1	-1		-1	-1	5	11
4	1	-1	1	1	2	2	2	1	-2	1	2				-1		2		1	1	1	1	2	2	2	3	17
9	1	-2	1	1		-1	1	1	2	2	2		-1				-2		-2	2	2	2	2	-2		6	12
10	1	-1	2	2	-2	2	1	2	-2	2	2		-1		-2		2		2	-2	2	2	2	2	-2	7	14
16	2	-2			1	1	1		2	1	2		2		-2		2		1	-2	1	2	1	2	1	3	15
17	1	-1	2	2	1	1	1	-2	2	1	2		-1		-2		-2		1	2	2	2	2	-2	-2	7	14
18	1	-2	1	1	1	1	1	1	2	1	1		2		-1		2		2	-2	1	1	1	2	1	3	18
19	1	2	1	1	2		2	2	1	1	2		2		2				1	1	1	1	1	1	2	0	19
20		-1													-1											2	0
Total (-)	0	14	0	2	2	2	1	4	3	0	1		10		10		4		2	4	0	2	1	6	3		
Total (+)	17	3	17	15	15	14	17	12	15	18	16		7		8		12		15	13	17	15.	16	12	13		

Referring to Table I, consider sex. Six girls of eight present and eight boys of eleven present participated in the class discussion. (One girl, a strong participant in class discussion, and one boy, a sometime participant, were absent on the day data were gathered.) Participation, then, was fairly evenly distributed across sex and fairly widely distributed within. In terms of decimals representing the proportion of negative to positive responses, boys and girls judged each other's contributions as follows:

	Boys	Girls
Boys	.24	.21
Girls	.23	.36

Both groups show a tendency - really insignificant in the case of boys - to judge the contributions of members of their own sex more harshly than the contributions of members of the other sex. The proportion of negative to positive responses given by girls to the contributions of girls stands in sharp contrast to the other three proportions reported, these being very near each other in value. It shows quite clearly that in this class, girls are a great deal harsher in their judgments of each other's contributions 1) than they are in their judgments of boys' contributions, 2) than boys are in their judgments of each other's contributions, and 3) than boys are in their judgments of girls' contributions.

TABLE II

Table II identifies each student who participated in class discussion by number (of button-box used) and sex, and shows the number of negative responses to his first or only contribution, his grades for the year in social studies, and his percentile score on the STEP social studies scale.

Neg. Res.	ID	Sex	Grades*				STEP SS	Neg. Res.	ID	Sex	Grades				STEP SS
0	1	M	G	S	S	S	53	4	11	M	S		S	S	36
0	18	F	E	E	E	E	93	4	9	F	E	E	E	E	67
1	8	M	S	S	S	S	96	4	17	F	E	S	E	VG	20
2	6	M	S	S	S	S	84	6	19	F	S	S	S	S	20
2	10	F	S	S	S	S	28	10	14	M	S	S	S	S	12
3	12	M	S	S	S	VG	93	10	4	F	S	S	S	S	16
								14	5	M	U	U	U	U	02

*U - Unsatisfactory; S - Satisfactory; E - Excellent;
G - Good; VG (Very good - better than satisfactory)

What of achievement? A quick glance at the grades earned by students in both groups - one composed of students receiving three or fewer negative responses and displayed on the left side of Table II, the other composed of students receiving four or more negative responses and displayed on the right side of Table II - suggests that there are no striking differences between the groups.[10] Crude numerical grade equivalents of 1 to 3 average out to 2.11 for those receiving more negative responses and 2.25 for those receiving fewer.[11]

Using a normative measure of achievement in social studies - the STEP social studies test - produces some striking differences.[12] While four of the six in the group receiving fewer nagative responses earned percentile scores of 84 and above, six of the seven in the group receiving more negative responses earned percentile scores of 36 and below. Concluding that a student's achievement in social studies accounts, if only in part, for the perceived usefulness of his contribution to class discussion, however, seems lacking in cause. What can account for both the level of his achievement and the usefulness of his contribution?

TABLE III

Table III identifies each student who participated in class discussion by number and sex, and shows the number of negative responses to his first or only contribution and his IQ according to Henmon-Nelson.[13]

Neg. Res.	ID	Sex	Henmon-Nelson IQ
0	1	M	128
0	18	F	141
1	8	M	116
2	6	M	136
2	10	F	120
3	12	M	135
4	11	M	123
4	9	F	129
4	17	F	124
6	19	F	135
10	14	M	113
10	4	F	116
14	5	M	102

Consider intelligence, even if crudely measured. Table III shows that four boys and two girls of the 13 students who participated in the class discussion received three or fewer negative responses to their first or only contribution. Three boys and four girls received four or more negative responses. The average Henmon-Nelson IQ for the six who received three or fewer negative responses is 129.3; that for the seven who received four or more negative responses is 122.8.[14] The argument implied here may be refuted quite effectively by reporting that for the five boys and four girls who received four or fewer negative responses, the average IQ is 128, while that for the two girls and two boys who received six to 14 negative responses is 116.5.

However, the girl who received six negative responses to her contribution has an IQ of 135, a quotient exceeded in value by only two others in the class. The boy who received only one negative response to his contribution shows an IQ of 116, a quotient lower than those of four students who received four to six negative responses. These are out of line. While the average IQ's of female contributors is 127.5 compared to the male contributors' 122.1, boys outnumber girls (four to two) in the group that received three or fewer negative responses to their contributions, and girls outnumber boys (four to three) in the group that received four or more negative responses. These tricks of the numbers suggest that intelligence does not alone determine the extent to which a student's contribution will be found useful by his classmates in class discussion.

On May 5, 1965, members of the class were administered a sociometric instrument.[9] One of the questions asked on that instrument was: Who are your three best friends? Responses to this question are displayed in Table IV.

TABLE IV

	Boys											Girls							
ID	1	2	3	5	6	7	8	11	12	13	14	4	9	10	16	17	18	19	20
1		1	2							3									
2	2		3				1												
3		1										2		3					
5	1							2											
6						2	3		1										
7							3		2										
8					2	3		1											
11				3									1			2			
12						3													
13	3										2								
14	1							3		2									
4		1												3		2			
9												2		3		1			
10		1										3	2						
16																3	2		1
17															2		3		1
18									1							3		2	
19																2	3		1
20																2	1	3	
Total Points	7	2	7	3	2	8	7	6	4	5	2	7	3	9	2	15	9	5	3
Rank	6.5	17.5	6.5	14	17.5	4	6.5	9	12	10.5	17.5	6.5	14	2.5	17.5	1	2.5	10.5	14

Like Table I, Table IV groups students along both vertical and horizontal dimensions according to sex. Within groups they are ordered according to an ID number derived from one arbitrarily given to the button-box before which they chose to sit. Reading across, one can determine which of his classmates each student chose as one of three best friends and, by the value of the entry, in what order the names of those chosen were listed. Weights of 3, 2, and 1 have been given to first, second, and third choices, respectively.[15] This weighting generates the figures in the row labelled "Total Points" and, in turn, produces the popularity ordering in the row labelled "Rank."

First some general observations. Responses to the question (i.e., Who are your three best friends?) reveal what might be expected. Best friends in this class of twelve- to thirteen-year-olds tend to be chosen from among members of one's own sex; they show that even the few cross-sex choices are more often second and third rather than first choices. It is interesting to note further that of four choices given to girls by boys, three are first or second choices, while girls give only third choices to boys. This can account in part for the boys' average popularity rank of 11 to the girls' 8.6. More intriguing is a simultaneous consideration of the girls' tendency to reserve popularity to other girls and their tendency to judge each other's contributions more harshly than they do the boys' contributions. (See Table I.) How can one account for these seemingly contradictory tendencies?

TABLE V

	Rank	Sex	ID	No. Negative Responses	Rank	Sex	ID	No. Negative Responses
	1	F	17	4	7	F	19	6
	2.5	F	10	2	8	M	12	3
	2.5	F	18	0	9.5	M	5	14
	5	M	1	0	9.5	F	9	4
	5	M	8	1	11	M	6	2
	5	F	4	10	12	M	14	10
	6	M	11	4				
Totals		4 3		21		2 4		39
Average		4 1.7				5 7.2		
Average		3				6.5		

In Table V students are ordered according to their popularity rank. So that the more popular may be compared with the less popular, the list has been split vertically and rearranged horizontally with the more popular on the left and the less popular on the right. Corresponding to each student's rank in the first column is a fourth column showing the number of negative responses made to his first or only contribution. In the other two columns each student's ID number and sex are indicated for reference purposes. The row at the bottom labelled "Totals" shows: 1) the number of boys in each group; 2) the number of girls in each group; and 3) the number of negative responses earned by all persons in the group. Below the row labelled "Totals" are two labelled "Averages": the first records the average number of negative responses to the contributions of boys and girls separately in both groups; the second records the over-all averages for both groups.

The overall averages for both groups - 3 and 6.5 - suggest an inverse relationship between popularity and frequency of negative response. But the difference in average number of negative responses earned between the first and second groups is accounted for almost entirely by the difference between the averages for boys in both groups - 1.7 and 7.2. The difference between the averages for girls is slight at best - 4 and 5. These differences, considered in connection with the data in Table I and IV, suggest (in answer to the question following Table IV) that girls, in showing a liking for each other, are more assured of their standing with members of their own sex and hence are judging the contributions rather than the girls who make them. Boys, on the other hand, seem to vary their judgments of contributions of other boys according to the popularity of the contributor.

On the basis of the data in Tables I, IV, and V, one may only conclude, confidently, that boys and girls in this class differ in the degree to which their within-sex judgments of contributions are affected by within-sex popularity of contributors. Because of the numbers of persons involved, the data leave unanswered questions concerning:

1. the degree to which cross-sex judgments are affected by within-sex popularity;
2. the degree to which within-sex judgments are affected by cross-sex popularity;
3. the degree to which cross-sex judgments are affected by cross-sex popularity.

SUMMARY AND SUGGESTIONS

We began by questioning the assumption that the value of a contribution, as defined by its perceived usefulness, will vary according to the qualities of the contribution itself. We substituted for it one to the effect that the value of a contribution will vary as well with the nature of the contributor. We asked, Is there a relationship between certain qualities of the contributor and the value of his contribution as perceived by others?

More specifically, we asked: What is the nature of the relationship between the perceived usefulness of a contribution and the sex of the contributor? What is academic achievement and intelligence of the contributor? What is popularity of the contributor?

The data shows:

1. that girls tend to judge the contributions of girls more negatively than they judge those of boys, and more negatively than boys judge those of either girls or boys;
2. that student capability (as indexed by both grades and STEP scores) tends to vary inversely with frequency of negative judgment (which supports the view that the perceived usefulness of a contribution will vary with substantive qualities of the contribution itself, if one assumes further a relationship between capability of contributor and quality of contribution);
3. that the boys in this class show a tendency to vary their judgments of contribution according to the popularity of the contributor; and
4. that girls in this class show a tendency to make their judgments of contributions without regard for the popularity of the contributor.

These observations question any assumptions about the value of contributions to class discussion that do not take into account other factors as well, in this case several resident with the contributor. The data suggest, by extension, that class discussions planned only in terms of the constraints imposed by the substance of what is to be discussed may fail, at least that whatever success such discussions may enjoy is contingently independent of the planner's efforts. The data suggest, then, that if classroom discussion is to be successful - that if class discussion is to effect learning - it must be planned with regard for the character of the contributors as well as the nature of the contribution.

NOTES

1. This study was conceived by Herbert A. Thelen, Professor of Education, The University of Chicago, and principal investigator under a grant to the Social Science Education Consortium. It was carried out and written with his counsel. It could not have been completed without the formal and substantive contributions of John Patrick, teacher of social studies in The University of Chicago Laboratory School.

2. In The University of Chicago Laboratory Schools, the seventh and eighth grades are combined in a single year of study - the prefreshman year - after which students enter high school as freshmen. Prefreshmen, then are between 12 and 13 years old.

3. Caught up - as he often was - in the excitement of his students as they discovered and developed new ways of thinking about what they already knew, John Patrick forgot to follow up most of the contributions to the discussion in this second class with a signal that judgments of the usefulness of the contribution were to be made. The writer would not have had it otherwise.

4. This description has been developed, with slight modification, from a report of an earlier study in the same class, also done under a grant to the SSEC.

5. These operation recorders (called event-recorders here) were manufactured by Esterline-Angus as Model AW.

6. The record chart (called paper tape here) was manufactured specially for Esterline-Angus's operation recorders and carries the following model number: 1740-X.

7. Two of the total number of 21 students in the class were absent. (Button-box number 15 was not used.)

8. The following directions were taken as spoken from a tape. There has been no editing.

   "Everything in our class period today is going to go on as usual; we're going to conduct a usual kind of discussion, except that we're going to do some things with these boxes. We'll be making judgments about this discussion. We're going to be having a written exercise Monday in which you'll be using this information that you've been working with the last couple of days; you'll be using that generalization that's on the board ('Workers have been more successful in solving their problems since the 1930's than before that time because of help from the federal government.'). And today, in preparing for that written exercise through discussion, I want you to judge the extent of which it is useful to you in preparation for our written exercise on Monday.

"Now, this is the way that you will make your judgments about the usefulness of what is said by anyone in class. If the statement - what is said - is altogether useless, you will press down once on the red button. Don't do it now;you will press down once on the red button. If what is said seems to be useless - it's not altogether useless, but it seems to be useless - it doesn't have too much value - press down the red button twice, deliberately, carefully, distinctly, twice. If what is said seems to be useful, press the other button, the green button, down twice, deliberately, distinctly, carefully. If what is said seems to be very valuable, very useful, really helpful to you, then press the green button down once. The code is on the board - the key is on the board - which tells you what to do.

"Now, do not press any buttons, do not make any judgments, by pressing buttons, unless I signal you to do so. At points along the way in our discussion, I will raise my hand like this (raises hand over head). Whenever I raise my hand, it is time for you to make these judgments that I have just instructed you about. Now, this is to be done individually; this is to be done independently. This making of judgments of what is said is not to be a group exercise. So it will have value if you kind of cup the box like this (cups hand around box on table in front of one of students, all of whom are in a circle) when you make your judgment, so that the judgment you make does not influence your neighbor's judgment. So when you do make your judgment - when you press the button - kind of cup your hands around the box so that only you know what judgment you're making."

It concludes with class members asking questions having the following form: If you wanted to indicate such and such a judgment, how would you do it?

9. That instrument, whose questions are reproduced below, was administered by Thomas Hawkes, then a research assistant to Herbert A. Thelen.

    1. Who are your three best friends?
    2. Who are three people you don't get along with?
    3. Who are three people you would like to play a game with?
    4. Among your classmates whom do you consider to be good friends with each other? Below are several spaces to list the pairs of friends. Do not include yourself.

    Questions No. 2, 3, and 4 were not used; No. 2 because of reticence in answering the question completely or at all; No. 3 and No. 4 because they are only indirectly relevant.

10. According to Philip Montag, chairman of the Department of Social Studies in the Laboratory School, the performance of the student is graded in direct competition with neither his

own nor others' performance but in relation to standards derivable from the teacher's view of the nature of the task and the capability of the student.

11. Those equivalents are as follows: U=1, S=2, G, VG, E=3. The difference between the 2.11 and 2.25 reported is more than accounted for by the student who received 14 negative responses; computing group averages without him reverses the relationship - 2.30 for those receiving more negative responses, 2.25 for those receiving fewer.

12. The data used here were recorded in the students' cumulative folders in March, 1965; the instrument was administered shortly before.

13. The Henmon-Nelson, Grade 6-9 Form A, was administered in January, 1965.

14. When this average is computed without the lowest IQ (102), earned incidentally by the boy who received the most negative responses (14), it is 123.3.

15. Justifying such weights is an assumption that best friends spring to mind - and are hence listed - according to the magnitude of "bestness."